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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
JOHNSTON, PHILLIP A	

ART UNIT	PAPER NUMBER
2881	

DATE MAILED: 02/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/043,389	KRANS ET AL.	
	Examiner	Art Unit	
	Phillip A Johnston	2881	

The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-5 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-5 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 26 October 2001 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Detailed Action

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-5 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5 of copending Application No. 10011618. Although the conflicting claims are not identical, they are not patentably distinct from each other because it is obvious to one of ordinary skill in the art that all the limitations in Claims 1-4 of Application No. 10043389 are contained in Claims 1-5 of Application No. 10011618. By way of example, a comparison of Claims 1 and 4 of Application No. 10043389, with Claim 1 of Application No. 10011618 is included below.

Claims 1 and 4, of Application No. 10043389, read as follows:

Claim1 (10043389). A particle-optical apparatus, which includes a particle source for producing a primary beam (22) of electrically charged particles which travel along an optical axis (4) of the apparatus,

a specimen holder for a specimen (18) to be irradiated by means of the apparatus, a focusing device (14, 16) for forming a focus of the primary beam in the vicinity of the specimen holder by means of electrostatic electrodes,

detection means (6) for detecting electrically charged particles emanating from the specimen in response to the incidence of the primary beam, which detection means are arranged ahead of the focusing device, viewed in the propagation direction of the electrically charged particles in the primary beam,

and an electrostatic final electrode, which is arranged directly ahead of the specimen holder, viewed in the propagation direction of the electrically charged particles in the primary beam, characterized in that

the apparatus is provided with power supply means (28) for adjusting a potential difference between the specimen (18) to be irradiated by means of the apparatus and the final electrode.

Claim 4, (10043389). A particle-optical apparatus as claimed in claim 2, in which the final electrode (42) is symmetrically subdivided into a number of electrically isolated segments around the optical axis (4).

Claim 1 of Application No. 10011618, reads as follows;

Claim 1, (10011618). A particle-optical apparatus which includes a particle source for producing a primary beam (22) of electrically charged particles which travel along an

optical axis (4) of the apparatus,

a specimen holder for a specimen (18) to be irradiated by means of the apparatus, a focusing device (14, 16) for forming a focus of the primary beam in the vicinity of the specimen holder by means of electrostatic electrodes,

a detector surface (9) for detecting electrically charged particles which emanate from the specimen in response to the incidence of the primary beam, which detector surface (9) is arranged ahead of the focusing device, viewed in the propagation direction of the primary beam, characterized in that the detector surface (9) is segmented into a number of mutually separated regions.

It is obvious to one of ordinary skill in the art that all the limitations in Claims 1 and 4 of Application No. 10043389 are for the most part, contained in Claim 1 of Application No. 10011618.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

3. Claims 1-5 are also provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5 of copending Application No. 10024777.

Although the conflicting claims are not identical, they are not patentably distinct from each other because it is obvious to one of ordinary skill in the art that all the limitations in Claims 1-4 of Application No. 10043389 are contained in Claims 1-5 of Application No. 10024777. By way of example, a comparison of Claim 1 of Application No. 10043389, with Claim 1 of Application No. 10024777 is included below.

Claim 1 of Application No. 10043389, is shown above. Claim 1 of Application No. 10024777 reads as follows:

Claim 1, (10024777). A particle-optical apparatus which includes a particle source for producing a primary beam (22) of electrically charged particles that travel along an optical axis (4) of the apparatus,

a specimen carrier for a specimen (18) to be irradiated by means of the apparatus,

a focusing device (14, 16) for forming a focus of the primary beam in the vicinity of the specimen carrier by means of electrostatic electrodes,

and a detector (6, 8) that has a detector surface (9) for detecting electrically charged particles that emanate from the specimen in response to the incidence of the primary beam, which detector is arranged ahead of the focusing device, viewed in the propagation direction of the primary beam, and which detector surface is provided with a central bore (11) for the passage of the primary beam,

characterized in that

the detector (6, 8) is provided with a central electrode (35) at the area of the central bore (11), and

that the particle-optical apparatus is provided with power supply means for adjusting such a voltage across the central electrode that at the area of the detector surface (9) the central electrode exerts a repulsive force on the particles that emanate from the specimen.

It is obvious to one of ordinary skill in the art that all the limitations in Claims 1 and 4 of Application No. 10043389 are for the most part, contained in Claims 1 and 2 of Application No. 10024777.

4. Claims 1-5 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,218,664. Although the conflicting claims are not identical, they are not patentably distinct from each other because it is obvious to one of ordinary skill in the art that all the limitations in Claims 1-4 of Application No. 10043389 are contained in Claims 1-6 of U.S. Patent No. 6,218,664. By way of example, a comparison of Claim 1 of Application No. 10043389, with Claim 1 of U.S. Patent No. 6,218,664 is included below.

Claim 1 of Application No.10043389, is shown above. Claim 1 of U.S. Patent No. 6,218,664 reads as follows:

Claim 1, (6,218,664). A particle-optical apparatus, which includes a particle source for producing a primary beam (22) of electrically charged particles, which travel along an optical axis (4) of the apparatus,

a specimen holder for a specimen (18) to be irradiated by means of the apparatus,

a focusing device (14, 16) for forming a focus of the primary beam in the vicinity of the specimen holder by means of electrostatic electrodes,

a beam deflection system (10, 12) for deflecting the primary beam,

detection means (6) for detecting electrically charged particles emanating from the specimen in response to the incidence of the primary beam, which detection means

are arranged ahead of the focusing device, viewed in the propagation direction of the electrically charged particles in the primary beam,

characterized in that

the beam deflection system (10, 12) is arranged between the detection means (6) and said electrostatic electrodes (14, 16) of the focusing device, and that the beam deflection system includes electrodes (10, 12) for deflecting the primary beam by means of at least two electrical deflection fields which have a mutually opposed direction component.

It is obvious to one of ordinary skill in the art that all the limitations in Claims 1-4 of Application No. 10043389 are for the most part, contained in Claims 1-6 of U.S. Patent No. 6,218,664.

5. Claims 1-5 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,184,525. Although the conflicting claims are not identical, they are not patentably distinct from each other because it is obvious to one of ordinary skill in the art that all the limitations in Claims 1-4 of Application No. 10043389 are contained in Claim 1 of U.S. Patent No. 6,184,525. By way of example, a comparison of Claim 1 of Application No. 10043389, with Claim 1 of U.S. Patent No. 6,184,525 is included below.

Claim 1 of Application No.10043389, is shown above. Claim 1 of U.S. Patent No. 6,184,525 reads as follows:

A particle-optical apparatus comprising:

a particle source for producing a primary beam of electrically charged particles,

which travel along an optical axis of the apparatus,

a specimen holder for a specimen to be irradiated by means of the apparatus,

an immersion lens for forming a focus of the primary beam in the vicinity of the specimen holder,

scanning means for scanning the specimen by means of the focused beam,

detection means for detecting signals originating from the specimen in response to the incidence of the primary beam, which detection means include an electrostatic detection electrode for generating an electric field in the space between the detection electrode and the specimen holder,

the detection means arranged to produce an electric multipole field around the optical axis, which extends transversely of the optical axis in the same space as the magnetic field of the immersion lens.

It is obvious to one of ordinary skill in the art that all the limitations in Claims 1 and 4 of Application No. 10043389 are for the most part, contained in Claim 1 of U.S. Patent No. 6,184,525.

Claims Rejection – 35 U.S.C. 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-5, are rejected under 35 U.S.C. 103(a), as being unpatentable over U.S. Patent Pub. No. 2001/0010357 to Ose, in view of Sato, U.S. Patent No. 5,149,968.

Ose (357) discloses a scanning electron microscope that includes a cathode 4, which emits electrons when a beam voltage 6 is applied across the cathode 4 and an emission control electrode 5. The electrons thus emitted are accelerated (decelerated in some cases) by the emission control electrode 5 and an anode 8 held at a ground voltage. An acceleration voltage for accelerating a primary electron beam 1 is equal to an electron gun acceleration voltage 7. The primary electron beam 1, accelerated by the anode 8 is gathered by a condenser lens 9. The angle of divergence of the primary electron beam 1 or beam current, is determined by a diaphragm 11 disposed below the condenser lens 9. A knob 12 is operated for centering the diaphragm 11. The primary electron beam 1 is decelerated by a decelerating electric field created between the objective 10 and the specimen 13 by applying a negative retarding voltage 15 through a stage 14 to the specimen 13 and is collimated by the collimating action of the objective 10. In this embodiment, the upper deflector 20 is a magnetic deflector and the lower deflector 30 is an electrostatic deflector. See Page 1, paragraph [0018] –[0022]

Ose also discloses that secondary signal electrons 2 are generated when the specimen 13 is irradiated with the primary electron beam 1. The secondary signal electrons 2 include secondary electrons and reflected electrons. The electric field created in a space between the objective 10 and the specimen 13 acts as an acceleration electric field on the secondary signal electrons 2. Therefore, the secondary signal electrons 2 are attracted to the electron beam passing aperture of the objective 10. The secondary signal electrons 2 travel upward being subjected to the focusing action of the magnetic field of the objective 10. The secondary signal electrons having high energy collide against a conversion electrode 16, whereby secondary electrons 3 are emitted. A positive high voltage of about 10 kV is applied to a scintillator 17. The scintillator 17 attracts (deflects) the secondary electrons 3 and emits light. A secondary electron detector, not shown, that detects secondary electrons guides the light emitted by the scintillator 17 by a light guide to a photomultiplier, the photomultiplier converts the light into a corresponding electric signal, the electric signal is amplified and the amplified electric signal is used for the brightness modulation of a CRT. See Page 2, paragraph [0026].

Ose (357) further discloses a multipole electrostatic deflector as the lower image shifting deflector and forms the electrostatic deflector on the effective principal plane of the objective to achieve the efficient detection of the secondary electrons without causing significant deterioration of resolution, even if an image shifting amount is great. Eight electrostatic deflecting electrodes 31 to 38, are formed by coating the front

and the back surface of a part of the disk around the electron beam passing aperture and the side surfaces of the electron beam passing aperture and the insulating slits with a conductive material by a vapor deposition process or a plating process. Voltages to be applied to the electrodes 31 to 38 are regulated in proportion to the cosine of the angle theta between an electron beam deflecting direction and the position of the electrodes 31 to 38 to deflect an electron beam by a desired distance in a desired direction. See Page 3, paragraph [0029]; Page 4, paragraph [0038]; and Figure 6.

Ose (357) disclosed nearly all the limitations of Claims 1-5 above, but did not disclose an "electrode being situated completely to one side of the optical axis", Sato (968); however, discloses an automatic control apparatus to optimize secondary electron collection, which the cylinder controller 53 controls the air cylinder 16 in such a fashion that when the acceleration voltage 50 is less than the reference voltage 51, the shield electrode 11 is moved to the position shown in FIG. 2A and when the acceleration voltage 50 is above the reference voltage 51, the shield electrode 11 is moved to the position shown in FIG. 2B. Accordingly, the operator can always make the observation under the optimum state without considering the acceleration voltage. See Column 4, line 24-39.

Hence, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Ose (357) SEM with the movable electrode of Sato(968) to improve secondary electron collection, thereby increasing resolution of the observation.

Conclusion

8. Any inquiry concerning this communication or earlier communications should be directed to Phillip Johnston whose telephone number is (703) 305-7022. The examiner can normally be reached on Monday-Friday from 7:30 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiners supervisor John Lee can be reached at (703) 308-4116. The fax phone numbers are (703) 872-9318 for regular response activity, and (703) 872-9319 for after-final responses. In addition the customer service fax number is (703) 872- 9317.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0956.

PJ
February 7, 2003

JOHN R. LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800